The Blazing Star

Fall 2024, Volume 25, Issue 4

A Publication of the North American Native Plant Society

Native Plant to Know

Willow-leaved Sunflower

Helianthus salicifolius

by Jane Zednik

Several years ago, I visited a small nursery known for offering unusual plants. A weird, wonderful giant of a plant instantly drew my attention. I didn't know at the time that it was a North American native – willow-leaved sunflower (*Helianthus salicifolius*). The nursery never offered it for sale after that year, apparently because customers found it too big and unwieldy, but I loved it. Since it came without growing instructions, I did my research and discovered it was native to central and southwestern United States. It grew naturally in a different geographic area, soil conditions and climate than what I have here on the Oak Ridges Moraine near Millbrook, Ontario.

Thinking it might not survive in our Canadian Zone 5, I planted it in a protected area on the south side of the house. Not only has it thrived over the years, it fits beautifully in the community it shares with giant ironweed (*Vernonia gigantea*), butterflyweed (*Asclepias tuberosa*), prairie coneflower (*Ratibida pinnata*), obedient plant (*Physostegia virginiana*) and other native plants. I divided the willow-leaved sunflower and planted some with tallgrass species, big bluestem (*Andropogon gerardii*) and Indian grass (*Sorghastrum nutans*), and prairie coneflower in an open, sunny area with poor soil to see how it would fare. It has been growing steadily for a few years, but does not reach the height of the clump beside the house.

In its natural habitat, this striking perennial grows on sunny, rocky outcrops, but can be found on shallow limestone slopes and prairies. Plant this drought-tolerant sun lover in any garden soil.

Some 70 species of *Helianthus* originated in North America. Only four are native to southern Ontario: woodland sunflower (*Helianthus divaricatus*); giant sunflower (*Helianthus giganteus*), which can grow up to three metres (10 feet); pale-leaved sunflower (*Helianthus strumosus*); and sunchoke (*Helianthus tuberosus*), a root vegetable otherwise known as Jerusalem artichoke. Willow-leaved sunflower is indigenous to the Great Plains and the Ozark Plateau, Illinois, Maryland, Missouri, New York, Ohio, Oklahoma, Wisconsin and Texas,

ILLUSTRATION BY KAITLIN BROUGH

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***The Blazing Star* is . . .**

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NANPS AGM HIGHLIGHTS

At the 2024 annual general meeting of the North American Native Plant Society, three directors stepped down after years of excellent service to the preservation and restoration of our native habitats:

Alice Kong was the longest serving member on the NANPS board. Thankfully, she remains as plant sale committee lead and seed exchange comittee lead.

Natasha Gonsalves was involved with our educational webinars and played important roles on our strategy and fundraising committees.

Adam Centurione managed the native plant video contest for the past two years and was involved on the land management committee.

We extend our deepest appreciation to these hard-working individuals who made a huge difference to our organization.

New to the board are **Jenn MacAusland**, who brings an entrepreneurial background and expertise in prairie and Atlantic Canada flora; **Elena Koneva**, who has an administration background and worked for 15 years with non-profit organizations; landscape designer **Anna Crombie**, who recently joined our land management committee; and **Sibylle Foppa**, who has a professional background in mental health. Many thanks to these enthusiastic new board members for their commitment to native flora.

Two contestants entered the native plant garden video contest in the experienced category: Fiona Caldwell-King came in first, Brandie Bevis was second. Chungsen Leung provided funding for the contest in memory of his wife, Deborah Chute.

The Volunteer of the Year award went to **Sayeh Beheshti**, known for her many contributions to the conservation and restoration of native plants, including her latest, highly successful endeavour, the garden tour and scavenger hunt she and fellow volunteers held at her home in Toronto in September. Delighted to receive the award, Sayeh notes, "NANPS is my favourite group and I belong to many! What unites us in this group is a love of life!"

Featured Speaker

Restoration biologist Stefan Weber entitled his talk "Seeds, Seriously…" Based on his experience designing, implementing and evaluating broad-scale, seed-based restoration projects in southern Ontario, he discussed the current state of native plant seed collection in our province, what is being done and what should be done.

Stefan developed a National Native Seed Strategy policy framework with the Canadian Wildlife Federation (CWF) for Environment and Climate Change Canada. In his talk, he stressed the need for a sustainable supply of ecologically appropriate seed for large-scale restoration efforts. Stefan took issue with the slow creep of "mechanistic" language into the speech of politicians and consultants, phrases such as "natural capital" for nature or "green infrastructure" for gardens. Plants and ecosystems are missing from the conversation when lifeless terms like

PHOTOGRAPH BY ALI HAYES

*Common milkweed (*Asclepias syriaca*)*

these are used. Nor, as he said, is planting trees as fast as possible the answer. We need to restore plant biodiversity, a complex process. Our seed supply for large-scale restorations must meet the demand for locally appropriate, genetically diverse and affordable native plant seed. Genetic diversity in nursery collections must be maintained through a flow of fresh genetics from wild-sourced seed. But a dependable seed supply chain needs coordination and specialized skills at every stage.

Stefan has also worked with Carolinian Canada on the Southern Ontario Seed Strategy (SOSS), exploring ways to support Indigenous-led rematriation and seed sovereignty; to protect the genetic diversity of seeds; to create space for locally sourced native plants everywhere; and to empower people to grow healthy, vital native plant populations. Visit **caroliniancanada.ca/seed/what**.

With the alarming decline of monarch butterflies, CWF, in partnership with Carolinian Canada, has updated its meadow restoration seed mix calculator with recommendations for southern Ontario ecozones, specifically targetting monarchs, **https://cwf-cf.org/en/resources/downloads/booklets-handouts/Seed-Calculator-Companion-Jan-23-CWF.pdf**.

A few important points: Different seeds demand different techniques for handling and management. If you see lots of parasites, that means there is an abundance of the host insect species. Small-scale projects, such as planting our gardens with locally sourced native plants, only seem to contribute to pollinator abundance if they are connected to broader landscape features and migratory corridors.

Stefan mentioned that the huge family of native leguminous plants supports soil health. Examples he gave were cuspid tick trefoil (*Desmodium cuspidatum*), Canada milk vetch (*Astragalus canadensis*), creeping tick trefoil (*Grona triflora*) and wood vetch (*Vicia sylvatica*), a climbing and scrambling perennial that likes sandy soil.

On the subject of climate change, Stefan noted that we do not have time to explore the science necessary to determine the best approach to assisted migration for all species. Broadly, he suggested taking an intuitive approach, using anecdotal evidence from foresters and others out in the field, and acting according to our gut instinct, because the climate is changing faster than we can conduct rigorous science on all the species impacted.

Valuable resources: the Society for Ecological Restoration (**ser.org**); Forest Gene Conservation Association (**fgca.net**); and **wildplantsfromseed.com**, a seed and information source for over 650 vascular plants.

Canada is home to some 3,700 native species of plants, 60% of which are insect-pollinated. One-third of these plants have medicinal value. It is important that we all make an effort to protect this legacy. For information about the tools needed for seed collection and a list of collection ethics, visit **https://ser-sid.org**.

It's Seed-collecting Season

One way to reduce the cost of native plant gardening is to collect your own seeds. Many seeds are ripe and ready for collection in the fall. Whether you're collecting from your garden or from plants growing in the wild, there are practical and ethical considerations to take into account. NANPS has several resources on this topic. Check out **nanps.org/seed-collecting** or watch the recording of our 2022 webinar, **Collecting and Cultivating Native Plant Seeds with Paul Heydon** on YouTube. Our page on indoor seed stratification, **nanps.org/96358-2/**, may also be helpful since many native seeds must experience simulated winter conditions in order to successfully germinate in the spring. Questions? Contact **seeds@nanps.org**.

Another way to reduce your gardening costs is to request seeds collected by other native plant enthusiasts by participating in NANPS annual seed exchange. Whether you send in your seeds or not, you can take advantage of what our valuable seed collectors have on offer – native tree, vine, shrub, forb or grass seeds. If you're sending in your own seeds, please separate them by species, identify their source/parentage and send them to NANPS Seed Exchange, Box 69070, St. Clair P.O., Toronto, Ontario, M4T 3A1. Seed packets are available for a small fee. Donors are first in line to order seeds. Thank you for participating in the effort to restore native plant communities!

Photograph by Matt Ireland

In Defence of Snags, the Bones of the Forest

by Jenny Morber

Three years ago in December, after a summer of fire bans, browning cedars and dust-covered boots, my home received the season's first drenching rain. I awoke to the sound of it, like a shushing, likely accompanied by a louder exhale of winds bending the trees and, occasionally, felling them.

My neighbourhood had been preparing. The woods echoed that summer with growling chainsaws, and a new couple went so far as to close the street so their arborists could take down two huge maples. The trees were, they said, diseased, but the stump wood looked healthy enough. It is a perverse incentive when a downed tree yields the arborist several hundred dollars, but a standing tree yields nothing.

They could at least have left a snag. Snags are the conciliatory bones of the forest – what you leave when you wish you could have left the tree. A decaying tree near a home or roadway is a potential hazard, but a snag – too short and poorly branched to shear a roof or down a power line – is a treasure. A snag is a decaying monument, a sculptural element, a teaching tool, a food source, a shelter, a lookout post, a home.

"It is hard to overemphasize the value of logs and snags to wildlife…" begins Sharon Ritter of the U.S. Forest Service in the 1997 leaflet *Dead Trees and Living Creatures*. "An amazingly diverse wildlife community depends on dead or dying trees."

That community may include woodpeckers, bluebirds, murrelets, wood ducks, titmice, great crested flycatchers, chickadees, hummingbirds, nuthatches, barred owls, screech owls, hawks, eagles, kestrels, buzzards, vultures, bats, grey squirrels, fox squirrels, flying squirrels, chipmunks, raccoons, grey foxes, opossums, weasels, fishers, wolverines, porcupines, frogs, snakes, salamanders, honeybees, mason bees, wasps, spiders and even black bears. In some forests, managers mark wildlife-prolific snags with signs for protection and education, and suggest landowners

Photograph by Jenny Morber

Mt. Rainer National Park in Washington State

Photograph by Don Scallen

Pileated woodpecker excavation

maintain at least five per acre.

Foresters haven't always felt this way. Throughout the early 1900s in the United States and Canada, snags were regarded as fire hazards. In 1946, an updated Forest Act for British Columbia made felling compulsory on Vancouver Island for any standing dead tree taller than 10 feet (three metres), a standard chosen as the height a man could throw enough dirt to extinguish a flame. Today, research suggests that dead and decaying trees help to prevent and mitigate fires and are important carbon sinks. As a 2013 research article in *Restoration Ecology* notes: "Snag management is a cornerstone of contemporary ecological forestry."

Illustration by Alan Li

But while snags may be resurging in the forest, they remain rare in the garden. Every house I have inhabited was once a forest. I have displaced resiny pines, giant oaks, honey locust and poplar, cedars, Douglas fir and bigleaf maple. Not once have I inherited a snag.

I have tried to leave them. Several years ago on our front lawn, a pair of dogwoods withered. My children loved to climb them and, as they were petite and isolated, we saw no harm. But their presence bothered our neighbours enough to elicit questions and when we moved a few years later they were quickly removed. People, it seems, do not want a new house with dead trees.

A live tree is easy to love. Green and fragrant, they shade and shield us. As children we learn how they exhale oxygen, hold the soil and pacify the wind. Trees flower. They make fruit. They seed and reproduce. They communicate and grow. Trees are comforting. People hang images of trees in living rooms and nurseries.

But a snag breaks and crumbles. Its skin sloughs. It shows its innards, almost obscene. Snags do not eat nor bleed. A snag does not flower or fruit, reproduce or grow. It disintegrates. It reduces. People decorate with images of snags, not in babies' rooms, but at Halloween. A snag's offense is that it is a dead thing.

A home is supposed to be a place of comfort, and dead things, says June Hadden Hobbs, professor of English at Gardner-Webb University in North Carolina and coauthor of the book *Tales and Tombstones of Sunset Cemetery*, are uncomfortable. We are, Dr. Hobbs says, in an age of "forbidden death." Just look at how we've outsourced the care of dead bodies to funeral homes, where the staff pretty them up, "embalm them, put makeup on them and make them look like they're alive." It is, if you think about it, rather absurd to hold a

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ceremony commemorating a death in which the subject is styled as living. In the mid-19th century, conversations about death were commonplace and sex was taboo. Now the two have switched places. "Death," Dr. Hobbs says, "is the pornography of our time."

But like sex, death can be beautiful. A snag is like a modern sculpture in a sea of impressionism. They rise, smooth and grey, riddled with holes, or flaky and buttery, from a landscape of fractal chaos. Snaggled and warped, curvy and ridiculous, hollow, squat, sinewy, tall, snags are more diverse than the trees that birthed them.

You can tell a story in snags. A metre at its base, the skeleton of a Douglas fir overlooks a wood below my driveway. Formerly the region's tallest survivor, it is a remnant of giants felled and sliced into towns and ships, and impregnated with pitch for the piers and docks that would enable more. Around the time the first waves of African people were forced onto North American coasts, the sapling had the good fortune to seed and grow on the side of a ravine on poor soil, too inconvenient to be cut by later waves of peopling. Now that the snag is barely half the tree's original height, locals make weekend treks to marvel and take pictures of this portal to the past.

Behind my home, a shorter, skinnier specimen that flanks a path I frequent with my children tells a more personal story. I remember our first sighting, how chubby fingers ran over flaking bark, watching for ants and arthropods. During the preschool years it sprouted a shelf fungus, adding a ring for every season. Primary school brought nesting chickadees. "Peep! Peep!" the chicks would implore as I gazed outside between requests from my own hungry children. Now as we navigate adolescence, the snag's centre has begun to crumble. "We are watching the decay of our civilization," my son tells me, idly scraping at spongy heartwood. I show him the sapling at its base.

Teen angst is defined by looking at the world and finding it broken, but he is coming of age in an era of unprecedented planetary change. We do so much unwitting damage: polluting and poisoning, cutting and killing. We pave, bisect and extract. We take much by our need and nature. Perhaps sometimes we can leave a little. Sometimes, I know, the trees are diseased, and wind could bring tragedy. But maybe we can offer to the world a snag.

Jenny Morber *is an internationally published science, health and environmental journalist with a PhD in engineering and scientific research experience (**jennymorber.com**). She writes from her home in the U.S. Pacific Northwest. This article was originally published in* The Globe and Mail *on December 24, 2021.*

Photograph by Jenny Morber

A snag along the trail at Mt. Rainer National Park


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The Firefly: the Perfect Mascot for Homegrown National Park®

by Grant Jensen and Krista De Cooke

Many of us can recall running barefoot as children through our backyards on warm summer evenings, the grass soft beneath our feet. As the sky darkened, fireflies began their enchanting dance, flickering like tiny stars scattered just out of reach. There was a magical quality to their glow, making the night feel full of wonder and life.

But now, in many places, that scene has changed. Fewer fireflies light up the night. Their numbers are declining each year due to habitat loss, pesticide use and increasing light pollution. Long a symbol of childhood wonder, these glowing creatures are slowly disappearing. Homegrown National Park (HNP), a non-profit organization that promotes regenerating biodiversity through planting native plants and removing invasive species, chose the firefly as its logo to represent both the beauty of nature and the urgent need to protect it.

The Firefly as a Symbol of Hope

HNP co-founder Michelle Alfandari was inspired to choose the firefly as the movement's mascot because of its simple yet powerful glow. The firefly doesn't just glow in the darkness; it lights the way for something bigger. Much like our individual efforts to create native habitat, fireflies show us that even the smallest creatures can have an enormous impact. As we restore natural ecosystems, fireflies – and the countless other species tied to these environments – begin to thrive, offering us a beautiful, tangible reward for our efforts. When you see fireflies in your yard, it's not just a lightshow—it's a signal that nature is coming back to life. And when you see the results of your native plantings, you light up yourself and others!

Fireflies and Healthy Ecosystems

There are over 2,000 species of fireflies worldwide, and more than one in three species in the United States may be threatened with extinction. These luminous insects are deeply connected to the ecosystems around them, part of a chain of interdependence that begins with native plants and radiates outward to include other insects, birds and small mammals. Many have evolved alongside specific native plants, which provide the habitat and support needed for the insects and small creatures that fireflies eat, offering nectar or pollen for some species of adult fireflies. This is especially true of powerhouse plants such as asters (*Aster* and other spp.) and goldenrods (*Solidago* spp.).

The larvae of fireflies live in the leaf litter and moist soils found in healthy forests, meadows and wetlands. Without these conditions, fireflies struggle to survive.

They play a role in soil health. Firefly larvae are primarily carnivorous and feed on smaller invertebrates, like snails, slugs and other larvae, helping maintain balance in ecosystems.

Photograph by Art Farmer, Evansville, Indiana, CC BY-SA 2.0 <https://creativecommons.org/licenses/by-sa/2.0>, via Wikimedia Commons

*Common eastern firefly (*Photinus pyralis*)*

The Decline of Fireflies: A Flickering Warning

Fireflies are sensitive to environmental disruptions, such as habitat destruction and light pollution, making them valuable indicators of ecological health.

If you think you're seeing fewer fireflies than when you were a kid, you're right. Fireflies are in decline globally. The reasons are complex, but one of the biggest factors is habitat loss. As wetlands, forests and meadows are cleared for development or converted into monocultures of lawn, fireflies lose the places where they lay their eggs and where their larvae thrive.

Pesticide use is another major contributor to firefly decline. Chemicals for controlling pests in gardens and agricultural fields don't discriminate – they also harm beneficial insects like fireflies and the smaller invertebrates that firefly larvae feed on.

Then there's light pollution. Fireflies rely on their bioluminescent signals to find mates. When artificial lights flood the night sky, it confuses their signals, reducing their ability to reproduce. By turning off your lights at night, you help restore the natural conditions that fireflies need to flourish.

The Science behind the Glow

Fireflies are a scientific marvel. Their glow, known as bioluminescence, occurs due to a chemical reaction in their lower abdomen, where luciferin (a light-emitting compound) combines with oxygen, calcium and an enzyme called luciferase. This reaction produces light with almost no heat, a

phenomenon scientists call "cold light."

For most species of firefly, the primary purpose of glowing is communication, specifically to attract mates. Each species has its own distinct flash pattern, which helps males and females find each other. In some species, males flash while flying and females respond with their own light signals from a perch. It's a fascinating courtship ritual, where light is the language of love.

However, bioluminescence isn't just for courtship. Firefly larvae also glow, though much more faintly. This glow is thought to serve as a warning to predators. Many firefly species produce chemicals that make them taste bad or toxic; the glow tells potential predators to steer clear.

How to Attract Fireflies to Your Garden

- Plant native species: Native grasses, wildflowers and shrubs provide essential habitat for fireflies and their prey.
- Turn off or dim outdoor lights: Fireflies rely on their bioluminescence to find mates. Artificial lighting, especially at night, can confuse them and disrupt their natural behaviour.
- Don't hire a mosquito fogger: Fogging for mosquitoes kills beneficial insects. Try a targeted approach: place a bucket of water outside with mosquito dunks, which release bacteria that kill mosquito larvae without harming other insects. (Visit author Joanna Brichetto's website, **sidewalknature.com/2022/05/08/mosquito-bucket-of-doom/.**)
- Leave leaf litter: Firefly larvae live in leaf litter and other organic matter on the forest floor. By leaving a layer of natural mulch or litter in your garden, you create habitat.
- Create low-traffic, no-mow zones: Fireflies spend much of their life cycle on the ground, where their larvae develop. Designating parts of your garden as no-mow zones with native plants or leaving natural spaces undisturbed can help them.
- Create moist, natural spaces: Fireflies often lay their eggs in moist environments, near ponds, wetlands or moist meadows. Provide a small water feature or maintain naturally wet areas in your yard.

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PHOTOGRAPH BY HOMEGROWN NATIONAL PARK

Fireflies at night

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•. Create soft landings by planting native groundcovers, shrubs and other plants beneath trees to support firefly larvae. (The concept was developed by conservation gardener Leslie Pilgrim and pollinator conservationist Heather Holm, **pollinatorsnativeplants.com/softlandings.html**.)

Light the Way

The next time you see the glow of a firefly, use it as a reminder: a single spark in the darkness has the power to inspire. When you plant native and support biodiversity, you experience the joy of bringing nature back to your ecosystem, creating a spark of your own. By providing an example of good stewardship for your community and joining individuals dedicated to conservation across North America, you are spreading that light. Together, these collective efforts will grow, restoring ecosystems and bringing nature back to our communities.

***Grant Jensen**, Marketing Manager for HNP, is an advocate for native habitats, transforming his own property and public spaces throughout Afton, Minnesota.*

***Krista De Cooke**, Strategic Partnership and Science Lead for HNP, combines her expertise in ecology and business with a passion for biodiversity, transforming her Tennessee property with native plants.*

To see the growing impact of biodiversity restoration across North America, explore the Homegrown National Park Biodiversity Map. Add your new or existing native plantings to the map, joining over 43,000 participants who have contributed more than 100,000 acres (over 40,000 hectares) of native plantings.

PHOTOGRAPH BY JOANNA BRICHETTO

Photinus pyralis *on* Viola sororia *(common blue violet)*

NATIVE PLANT GARDEN VIDEO CONTEST COORDINATOR NEEDED

NANPS is looking for an enthusiastic person to take on the role of volunteer coordinator for the Native Garden Annual Video Contest. The program will run for another two years – 2025 and 2026. The new coordinator will be someone who works well independently and has some experience editing videos (or is eager to learn). They will be posting on social media and offering excellent customer service. The ability to solve minor digital issues will also be an asset. This is a great opportunity to gain knowledge and experience in these areas and help promote native plant gardening and conservation. Contact Adam at acenturione@nanps.org for details.

Natural Illusions: The Broad-winged Katydid

by Sophie Sjogren

As you walk through a vibrant forest, sunlight dapples the leaves, each one dancing gently in the wind. They sway and dip fluidly, except for one leaf that twirls toward a neighbouring branch. Intrigued, you move closer. An outline emerges – delicate legs, translucent wings and two glistening eyes staring back at you. You've stumbled upon a broad-winged katydid, a small green insect that has turned camouflage into an art form.

Over almost half a billion years, insects have evolved remarkable survival strategies. Monarch butterflies feast on the poisonous compounds of milkweeds (*Asclepias* spp.) to make themselves toxic to predators, while ants form alliances with aphids for their sweet secretions. One of the most stunning adaptations in the animal kingdom is plant mimicry.

The broad-winged katydid is a virtuoso in this art of deception. Because of predation pressure, the katydid evolved cryptic coloration, allowing it to blend seamlessly with its environment. Its wings are shaped and coloured like the ovate leaves of certain trees, even capturing the subtle veining and textures of elm (*Ulmus* spp.), beech (*Fagus grandifolia*) and countless other plants. This remarkable mimicry allows katydids to hide from predators during the late spring and summer months. In the fall, katydids will lay eggs on the midribs of leaves or in tree bark to overwinter safely.

Their versatility means you can find broad-winged katydids in many different environments across North America, from dense forests and wooded wetlands to your backyard garden. They may be in the young birch tree (*Betula* spp.) in your neighbourhood or the blueberry (*Vaccinium* spp.) bushes by the highway. In open meadows, you may walk right past them as they disguise themselves in the foliage of goldenrods (*Solidago* spp.) and asters (*Aster* spp.).

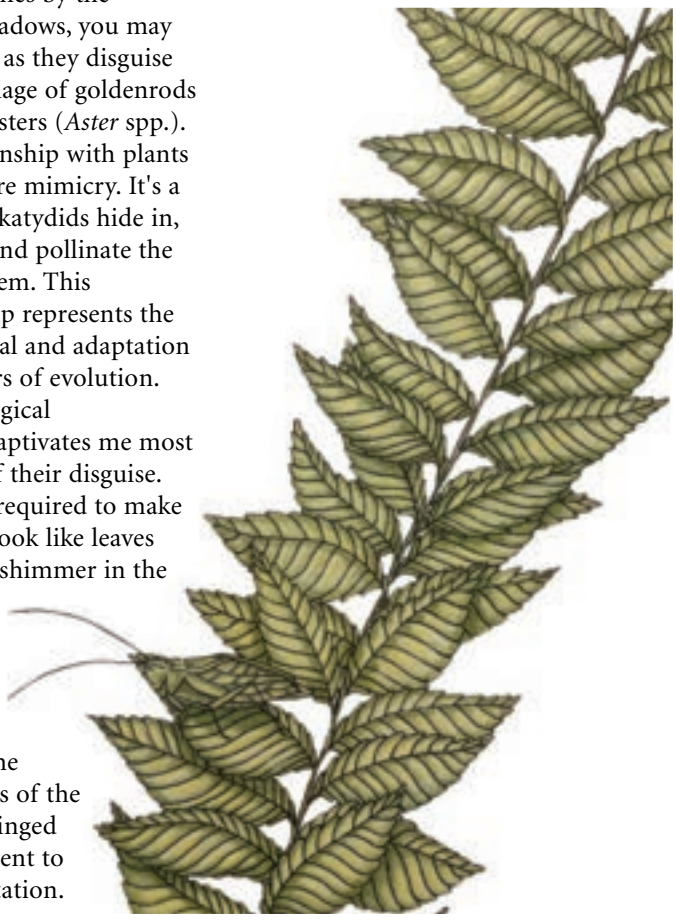
The insect's relationship with plants goes deeper than mere mimicry. It's a subtle partnership – katydids hide in, sustainably feed on and pollinate the plants that shelter them. This symbiotic relationship represents the fine-tuning of survival and adaptation from millions of years of evolution.

Beyond their ecological relationships, what captivates me most is the sheer beauty of their disguise. Imagine the artistry required to make wings that not only look like leaves but mimic how they shimmer in the sunlight. The veins on the katydid's wings catch the light in the same intricate way as the leaves surrounding the insect. Like fragments of the forest itself, broad-winged katydids are a testament to the elegance of adaptation.

Growing up in Michigan's Lower Peninsula, I remember evenings filled with the katydid's raspy song. I'd follow the trail of tunes, but my fear of the dark usually cut the search short. When I did find a katydid, it felt like uncovering a secret – a hidden world of magic in the ordinary green of the forest.

I encourage you to take a closer look the next time you're outdoors in the summer. Stop for a moment. Study the leaves – there's a chance a katydid is there, hiding in plain sight. Listen for its song. Let your curiosity guide you. For now, start by finding the three katydids camouflaged in the elm leaves on this page. They're watching you, hidden, daring you to see them.

Sophie Sjogren *is a computer scientist, art enthusiast and recreational entomologist from Ann Arbor, Michigan. She loves to explore nature's curiosities and inspire appreciation for insects.*



ILLUSTRATIONS BY SOPHIE SJOGREN

The Rapid Response to a New Invader

by Katie Church

In 2020, a recreational paddler made a disturbing ecological discovery in the Welland River in southern Ontario. As the kayaker paddled quietly around bends in the river, they noticed an "interesting- looking" plant floating on the surface of the water that bore no resemblance to the native yellow pond lily (*Nuphar lutea*) or arrowhead (*Sagittaria latifolia*) they were used to seeing. Armed with a basic knowledge of invasive species and the tools to identify them, the paddler used the Early Detection and Distribution Mapping System app (EDDMapS) to report their observation. They identified the mystery plant as the highly invasive annual European water chestnut (*Trapa natans*). A rapid response team was assembled and a plan was implemented to control and mitigate the impact of European water chestnut (EWC) on the river ecology.

Native to Europe, Asia and Africa, EWC was introduced to North America as an ornamental for pond gardens, but over the past decade it has been found in large waterways and natural areas such as the Ottawa River, the St. Lawrence River around Wolfe Island and Voyageur Provincial Park. The Welland River is an urban waterway running east to west through the Niagara Region, wending its way through vast agricultural lands into the City of Welland and eventually out to the Niagara River, which links Lake Erie and Lake Ontario.

European water chestnut leaves are serrated and triangle-shaped with a glossy green shine. The rooted plants float on the surface of slow-moving

Photograph courtesy INVASIVE SPECIES CENTRE

Photograph courtesy INVASIVE SPECIES CENTRE

European water chestnut rosettes

lakes, rivers and streams that have a soft substrate. Each plant grows up to two metres (six feet) in length, producing 10-15 rosettes, which can be described as stems with clusters of air-pocket-filled leaves and green fleshy seeds attached to the underside of each leaf. Each rosette produces 15-20 seeds that drop late in the growing season, producing next year's growth of dense, floating mats. The mats prevent swimming and boating, shade out native vegetation, decrease plant diversity and reduce light penetration. Yearly decomposition of these mats can decrease dissolved oxygen levels, which can negatively affect fish populations. In addition, the seeds, which eventually turn hard, sharp and woody, can wash up on shorelines, posing a danger to bare feet.

European water chestnut is a prohibited species in Ontario under the *Invasive Species Act of 2015*. It is illegal to import, sell, lease or trade this plant. Precautions must be taken when boating through infested waters. Watercraft operators must clean, drain and dry their vessels after each use; this practice ensures that European water chestnut and other non-native plants are not transferred from one location to another, so that invasive species are contained within specific areas.

PHOTOGRAPH COURTESY INVASIVE SPECIES CENTRE

Rapid response team pulling out the European water chestnut

The 2020 sighting of this prohibited species in the Welland River prompted the Invasive Species Centre (ISC) to survey the extent of the infestation in 2021. The survey revealed smaller populations along a 33-kilometre (20-mile) stretch of the river from Wellandport into the city of Welland. ISC staff determined that EWC could be managed and controlled manually using canoes and a small motor boat. Invasive species technicians would canoe upstream and down, close to the shoreline where European water chestnut grows, and hand-pull the plants individually before the seeds dropped. This would ensure that no new annual growth would be present the following growing season, thereby drastically decreasing the population size each year.

Comparing numbers from year to year shows that the technique is successful. In 2022, 7,000 plants were removed along the river; in 2023 this number decreased to 1,000. Mapping data from the 53 kilometres (33 miles) of river monitored showed that the infestation had stayed in its known range from the previous year. In 2024 a new population of EWC was identified and reported through the iNaturalist app by another recreational paddler. This population was found 10 kilometres (six miles) further west in Oswego Creek, with no EWC observed between this location and the previously monitored area. The new infestation featured robust growth and dense mats floating on the water's surface. Fortunately, the technicians caught it early enough to remove all the European water chestnut (some 1,300 plants); a plan has been implemented to monitor this population next year. This discovery highlights the importance of community outreach and platforms

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PHOTOGRAPH COURTESY INVASIVE SPECIES CENTRE

like EDDMapS and iNaturalist, which play a vital role in identifying and controlling invasive species.

The EWC Rapid Response Program in the Welland River was created by the Invasive Species Centre in 2022 in collaboration with several organizations and government agencies, including the Niagara Peninsula Conservation Authority, Ontario Federation of Anglers and Hunters and the Ontario Ministry of Natural Resources. Their continued support has been vital to moving the project forward into its third year.

As an adjunct to active removal of EWC, the Invasive Species Centre and the Niagara Peninsula Conservation Authority created Paddle with a Purpose tours. These community outreach tours provide local paddlers with the opportunity to expand their knowledge of aquatic plants and invasive species, and teach them how to report findings on EDDMapS. The paddler's initial discovery of EWC in the Welland River shows us that outdoor enthusiasts, our eyes on the water, can become confident citizen scientists that help steward the waters (and wild lands) we all enjoy.

Katie Church *is a research support officer and the EWC Field Team lead at the Invasive Species Centre.*

Letters to the Editor

For stream or riverbank stabilization, plant any of the following: red-osier dogwood (*Cornus sericea*), white elder (*Sambucus canadensis*), white meadowsweet (*Spiraea alba*), smooth rose (*Rosa blanda*), heart-leaved willow (*Salix eriocephala*), pussy willow (*Salix discolor*), sandbar willow (*Salix interior*), Freeman maple (*Acer x freemanii*), red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), swamp white oak (*Quercus bicolor*) or buttonbush (*Cephalanthus occidentalis* var. *occidentalis*). Riverbanks tend to be wet and all the plants listed here tolerate, or are adapted to, wet conditions. ***John Foster***

The most persistent invasive species in my yard in Boulder, Colorado, have been cheatgrass (*Bromus tectorum*) and salsify (*Tragopogon dubius*). This being a high-plains, southwestern environment, the soft ground in spring is the best for weeding them out before they go to seed. But I don't have to pull many. They mostly stay out of my native plant yard. Some of the most successful native plants against invasives have been yucca (*Yucca glauca*), gambel oak (*Quercus gambelii*) and creeping hollygrape (*Mahonia repens*). The hollygrape covers the ground beneath the oaks. Other species thriving in this "scheme" are pinyon pine (*Pinus edulis*), a ponderosa pine (*Pinus ponderosa*), golden aster (*Chrysopsis villosa*) and purple aster (*Aster conspicuus*). The asters are volunteers, wild natives, as is a patch of pussytoes (*Antennaria parvifolia*). ***Evan Cantor***

Continued from page 1 – **Willow-leaved Sunflower**

where it is classified as endangered. Still, it is a welcome marvel on my property, justified to native plant purists by an erratically warming climate.

Not only are its distinctive foliage and great height simply amazing, willow-leaved sunflower blooms here in southern Ontario from mid-October to the first week of November (with warmer temperatures this year it started blooming fully a month early). Thus it provides nourishment and shelter for bees and butterflies late in the year when few plants are still in bloom – a service for pollinators that is becoming more critical as weather patterns fluctuate wildly. It is a larval host for such whimsically named lepidoptera as the oblique-striped emerald moth, silvery checkerspot, bordered patch and gorgone checkerspot. Native solitary bees use these plants as a refuge from inclement weather and as a safe place to sleep at night.

Willow-leaved sunflower typically grows 2 ½ metres (eight feet) tall or taller. Its flower clusters sport 10 to 20 bright lemony rays with dark red-brown centre discs. Each flowerhead has multiple flowers. The flower clusters appear at the tip of long, wand-like, whitish-green stems. The narrow, drooping, pale-green, alternate leaves arch away from the stem, creating a visually appealing silhouette when they wave in the slightest breeze. After blooming, *Helianthus salicifolius* produces slender, smooth, brown achenes, tipped with two to four awns. These enclose very small seeds, which migrating birds like to feast on.

Willow-leaved sunflowers spread via underground rhizomes to form dense colonies. If you plant it in a confined space, divide it every three to four years to control its spread.

The plant's common name is a direct translation of the Greek *Helianthus – helios* meaning sun and *anthos* flower. The species' name *salicifolius* refers to the leaves, which are similar to those produced by *Salix* species (willows). But the name does not do its striking beauty justice. This plant would be a breathtaking feature in any garden.

Jane Zednik *has long been fascinated with establishing native plants, especially species at risk, on her rural property. She is especially interested in starting plants from seed and saving seeds to be distributed and shared.*

Photograph by Jane Zednik

Bumblebee feeding on Helianthus salicifolius

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